Amendments to the Claims

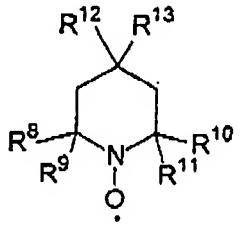
This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A process for preparing alkynecarboxylic acids, comprising

oxidizing an alkyne alcohol with a hypohalite in the presence of a nitroxyl compound at a pH of greater than 7 within a reaction mixture; and

continuously adding the alkyne alcohol and the hypohalite to the reaction mixture, wherein said nitroxyl compound has the formula:



where radicals R^8, R^9, R^{10} and R^{11} are each independently C_1-C_{12}-alkyl or C_2-C_{12}-alkenyl or C_6-C_{12}-aryl or aralkyl,

and radicals R^{12} and R^{13} are each independently hydrogen, OH,

CN, halogen, linear or branched, saturated or unsaturated C_1-C_{20}-alkyl, C_6-C_{20}-aryl, C_6-C_{20}-hetaryl or C_6-C_{20}-aralkyl, OR^{14}, $O-COR^{14}$, $O-COOR^{14}$, $OCONHR^{14}$, COOH, COR^{14}, $COOR^{14}$, $CONHR^{14}$,

where R^{14} is a linear or branched, saturated or unsaturated C_1-C_{20}-alkyl radical, or a C_6-C_{20}-aryl, C_3-C_{20}-hetaryl or C_6-C_{20}-aralkyl radical, $-(O-CH_2-CH_2)_n-OR^{15}$, $-(O-C_3H_6)_n-OR^{15}$, $-(O-(CH_2)_4)_n-OR^{15}$, $-O-CH_2-CHOH-CH_2-(O-CH_2-CH_2-)_n-OR^{15}$,

where R^{15} is hydrogen, C_1-C_{20}-alkyl, C_6-C_{20}-aralkyl, where n = 1 to 100, or $CH_2-CHOH-CH_3$ or $CH_2-CHOH-CH_2-CH_3$, $NR^{16}R^{17}$, $NHCOR^{16}$, $NHCOOR^{16}$, $NHCONHR^{16}$,

where R^{16} and R^{17} are each independently a linear or branched, saturated or unsaturated C_1-C_{20}-alkyl radical, a C_6-C_{12}-cycloalkyl radical, or a C_6-C_{20}-aryl, C_3-C_{20}-hetaryl or C_6-C_{20}-aralkyl radical,

where radicals R^{12} and R^{13} may also be linked to a ring,

and where the radicals R^{12} and R^{13} in turn may also be substituted by COOH, OH, SO_3H, CN, halogen, primary, secondary or tertiary amino or quaternary ammonium.

or the radicals R^{12} and R^{13} together may also be =O, $=NR^{18}$, $=N-OR^{16}$, $=N-N=CR^{18}R^{19}$ where R^{18} and R^{19} are each independently hydrogen, C_1-C_{20}-alkyl or C_6-C_{20}-aralkyl.

Claim 2 (Original): The process as claimed in claim 1, wherein the reaction is carried out in a multiphasic system.

Claim 3 (Original): The process as claimed in claim 2, wherein at least one phase transfer catalyst is used.

Claim 4 (Original): The process as claimed in claim 1, comprising removing the reaction mixture continuously.

Claim 5 (Original): The process as claimed in claim 1, wherein the pH of aqueous phase of the reaction mixture is between 7 and 11.

Claim 6 (Original): The process as claimed in claim 1, wherein the nitroxyl compound used is 4-hydroxy-TEMPO.

Claim 7 (Original): The process as claimed in claim 1, wherein reaction temperature is between -5°C and 20°C.

Claim 8 (Original): The process as claimed in claim 1, wherein from 2 to 3 mol equivalents of the hypohalite are used based on the number of functional groups to be oxidized.

Claim 9 (Original): The process as claimed in claim 1, wherein the alkyne alcohol used is selected from the group consisting of 2-propyn-1-ol and 2-butyne-1,4-diol.

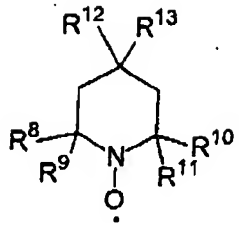
Claim 10 (Original): The process as claimed in claim 1, wherein the reaction is carried out in the presence of a substance selected from the group consisting of phosphate buffer and calcium carbonate.

Claim 11 (Currently Amended): A process for preparing alkynecarboxylic acids, comprising

initially charging less than all of an alkyne alcohol to be oxidized in a reaction mixture;

oxidizing the alkyne alcohol with a hypohalite in the presence of a nitroxyl compound at a pH of greater than 7 within the reaction mixture; and

continuously adding remainder of the alkyne alcohol and the hypohalite to the reaction mixture, wherein said nitroxyl compound has the formula:



where radicals R^8, R^9, R^{10} and R^{11} are each independently C_1-C_{12}-alkyl or C_2-C_{12}-alkenyl or C_6-C_{12}-aryl or aralkyl,

and radicals R^{12} and R^{13} are each independently hydrogen, OH, CN, halogen, linear or branched, saturated or unsaturated C_1-C_{20}-alkyl, C_6-C_{20}-aryl, C_6-C_{20}-hetaryl or C_6-C_{20}-aralkyl, OR^{14}, O-COR^{14}, O-$COOR^{14}$, $OCONHR^{14}$, COOH, COR^{14}, $COOR^{14}$, $CONHR^{14}$,

where R^{14} is a linear or branched, saturated or unsaturated C_1-C_{20}-alkyl radical, or a C_6-C_{20}-aryl, C_5-C_{20}-hetaryl or C_6-C_{20}-aralkyl radical, $-(O-CH_2-CH_2)_n-OR^{15}$, $-(O-C_3H_6)_n-OR^{15}$, $-(O-(CH_2)_4)_n-OR^{15}$, $-O-CH_2-CHOH-CH_2-(O-CH_2-CH_2-)_n-OR^{15}$,

where R^{15} is hydrogen, C_1-C_{20}-alkyl, C_6-C_{20}-aralkyl, where n = 1 to 100, or $CH_2-CHOH-CH_3$ or $CH_2-CHOH-CH_2-CH_3$, $NR^{16}R^{17}$, $NHCOR^{16}$, $NHCOOR^{16}$, $NHCONHR^{16}$,

where R^{16} and R^{17} are each independently a linear or branched, saturated or unsaturated C_1-C_{20}-alkyl radical, a C_6-C_{12}-cycloalkyl radical, or a C_6-C_{20}-aryl, C_3-C_{20}-hetaryl or C_6-C_{20}-aralkyl radical,

where radicals R^{12} and R^{13} may also be linked to a ring,

and where the radicals R^{12} and R^{13} in turn may also be substituted by COOH, OH, SO_3H, CN, halogen, primary, secondary or tertiary amino or quaternary ammonium,

or the radicals R^{12} and R^{13} together may also be =O, $=NR^{18}$, $=N-OR^{18}$, $=N-N=CR^{18}R^{19}$ where R^{18} and R^{19} are each independently hydrogen, C_1-C_{20}-alkyl or C_6-C_{20}-aralkyl.

Claim 12 (Original): The process as claimed in claim 11, wherein the reaction is carried out in a multiphasic system.

Claim 13 (Original): The process as claimed in claim 12, wherein at least one phase transfer catalyst is used.

Claim 14 (Original): The process as claimed in claim 11, comprising removing the reaction mixture continuously.

Claim 15 (Original): The process as claimed in claim 11, wherein the pH of aqueous phase of the reaction mixture is between 7 and 11.

Claim 16 (Original): The process as claimed in claim 11, wherein the nitroxyl compound used is 4-hydroxy-TEMPO.

Claim 17 (Original): The process as claimed in claim 11, wherein reaction temperature is between -5°C and 20°C.

Claim 18 (Original): The process as claimed in claim 11, wherein from 2 to 3 mol equivalents of the hypohalite are used based on the number of functional groups to be oxidized.

Claim 19 (Original): The process as claimed in claim 11, wherein the alkyne alcohol used is selected from the group consisting of 2-propyn-1-ol and 2-butyne-1,4-diol.

Claim 20 (Original): The process as claimed in claim 11, wherein the reaction is carried out in the presence of a substance selected from the group consisting of phosphate buffer and calcium carbonate.